

**401 KAR 61:175. Leaks from existing synthetic organic chemical and polymer manufacturing equipment.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

RELATES TO: KRS 224.20-100, 224.20-110, 224.20-120; Appendix A to 40 CFR 60 (Method 21); 42 USC 7410

STATUTORY AUTHORITY: KRS 224.10-100

NECESSITY AND FUNCTION: KRS 224.10-100 requires the Natural Resources and Environmental Protection Cabinet to prescribe regulations for the prevention, abatement and control of air pollution. 42 USC 7410 likewise requires the state to implement standards for national primary and secondary ambient air quality. This regulation provides for the control of volatile organic compound emissions from leaks from existing synthetic organic chemical and polymer manufacturing equipment.

**Section 1. Definitions.**

As used in this regulation, all terms not defined in this section shall have the meaning given to them in 401 KAR 61:001.

(1) "Affected facility" means each individual component which contacts a process fluid that contains greater than ten (10) percent volatile organic compounds (VOCs) by weight within a synthetic organic chemical manufacturing plant or polymer manufacturing plant.

(2) "Component" means a piece of equipment, including but not limited to pumps, valves, compressors, and pressure relief valves, which has the potential to leak (VOCs).

(3) "Synthetic organic chemical manufacturing plant" means facilities which operate equipment in process units to manufacture methyl tert-butyl ether or one (1) or more of the synthetic organic chemicals listed in 401 KAR 59:305.

(4) "Polymer manufacturing plant" means a facility which operates equipment in process units to manufacture polyethylene, polypropylene, or polystyrene.

(5) "Leak" means the presence of a VOC concentration exceeding 10,000 ppm by volume if tested in the manner referenced in Section 5 of this regulation.

(6) "Gas service" means that the VOC is gaseous at conditions that prevail in the component during normal operations.

(7) "In light liquid service" means that the component contacts a liquid with a concentration greater than twenty (20) percent by weight of VOCs having a vapor pressure greater than three-tenths (0.3) kilopascals at twenty (20) degrees Celsius.

(8) "Light liquid" means a liquid with a concentration greater than twenty (20) percent by weight of VOCs having a vapor pressure greater than three-tenths (0.3) kilopascals at twenty (20) degrees Celsius.

(9) "Heavy liquid" means a fluid which is not in the gaseous state at operating conditions or which is not a light liquid.

(10) "Process unit" means components assembled to manufacture, as intermediate or final products, one (1) or more of the chemicals referenced in subsections (3) and (4) of this section. A process unit can operate independently if it is supplied with sufficient feed or raw materials and sufficient storage facilities for the product.

(11) "Classification date" means January 5, 1981.

**Section 2. Applicability.**

(1) This regulation shall apply to each affected facility commenced on or before the classification date defined in Section 1 of this regulation which is located in a county or portion of a county which is designated ozone nonattainment, for any nonattainment classification except marginal, under 401 KAR 51:010.

(2) This regulation shall not apply to components within a petroleum refinery complex. Leaks from new and existing petroleum refinery equipment shall

be regulated by 401 KAR 59:049 and 401 KAR 61:137, respectively.

### **Section 3. Standard for VOCs.**

(1) If an affected facility within the manufacturing plant is found to be leaking, the owner or operator shall repair the leak within fifteen (15) days. A component recheck shall be made within five (5) days after repair. If the leak is still present or a new leak is created by the repair, further maintenance shall be performed until the VOC emission drops below the screening value (10,000 ppm by volume).

(2) Any time a valve is located at the end of a pipe or line containing VOCs, the owner or operator shall seal the end of the line with a second valve, a blind flange, a plug, or a cap. This sealing device may be removed only when a sample is being taken or during maintenance operations. This requirement shall not apply to safety pressure relief valves.

### **Section 4. Monitoring and Reporting Requirements.**

The owner or operator shall conduct monitoring of affected facilities and submit records as specified below:

(1) The operator shall perform component monitoring using the method referenced in Section 5 of this regulation as follows:

(a) Monitor with a portable VOC detection device four (4) times per year (quarterly) pumps in light liquid service, compressors, valves in light liquid service, valves in gas service, and pressure relief valves in gas service.

(b) Monitor visually fifty-two (52) times per year (weekly) pumps in light liquid service. Each pump shall be repaired within fifteen (15) days after visual inspection indicates it is leaking.

(c) Monitor with a portable VOC detection device a pressure relief valve within five (5) days after it has vented to the atmosphere. Pressure relief devices which are tied in to either a flare header or vapor recovery device shall be exempt from the monitoring requirements.

(d) Monitor with a portable VOC detection device within five (5) days of discovery, a component whose sight, smell, or sound indicates that it might be leaking.

(e) Difficult or unsafe-to-monitor components shall be exempt from this subsection, however these components shall meet the requirements for difficult or unsafe-to-monitor valves as specified in 401 KAR 59:305.

(2) Pipeline valves and pressure relief valves for gas service shall be marked or noted so that their location is readily obvious to both the operator performing the monitoring and the cabinet.

(3) When a leak is located, a weatherproof and readily visible tag bearing an identification number and the date the leak is located shall be affixed to the leaking component. The location, tag number, date, and stream composition of the leak shall also be noted on a survey log. When the leak is repaired, the date of repair and date and detector reading of component recheck after maintenance shall be entered in the survey log and the tag discarded. The operator shall retain the survey log for two (2) years after the inspection is completed. The survey log shall be made available to the cabinet upon request.

(4) After quarterly monitoring has been performed the operator shall submit a report to the cabinet listing all leaks that were located but not repaired within the fifteen (15) day limit and a signed statement attesting to the fact that all monitoring has been performed as stipulated in the control plan. Leaks that cannot be repaired within fifteen (15) days shall be repaired during the next scheduled turnaround. If the cabinet requests it, the owner or operator shall demonstrate to the cabinet's satisfaction why the repairs could not be completed within the initial fifteen (15) day period. If the leak is unable to be brought into compliance, a variance shall be requested which the cabinet may grant on an individual basis, based upon a showing which is satisfactory to the cabinet. Case-by-case alternatives approved by the cabinet, but not previously authorized by the U.S. EPA, shall be submitted to the U.S. EPA as a SIP revision.

#### **Section 5. Test Methods and Procedures.**

(1) Except as provided for in 401 KAR 50:045, Appendix A to 40 CFR 60, Method 21, which has been incorporated by reference in 401 KAR 50:015, shall be used to determine compliance with the standard prescribed in Section 3 of this regulation and the monitoring requirements in Section 4 of this regulation.

(2) The owner or operator may elect to use alternate monitoring methods if it can be demonstrated to the cabinet's satisfaction that the alternate methods shall achieve equivalent control efficiency.

#### **Section 6. Compliance Timetable.**

(1) Affected facilities which were subject to this regulation as in effect on December 2, 1986, shall have achieved final compliance by January 1, 1988.

(2) The owner or operator of an affected facility that becomes subject to this regulation on or after the effective date of this regulation shall complete the following:

(a) Submit a final control plan for achieving compliance with this regulation no later than six (6) months after the date the affected facility becomes subject to this regulation.

(b) Final compliance shall be achieved no later than twelve (12) months after the date the affected facility becomes subject to this regulation.

(c) If an affected facility becomes subject to this regulation because it is located in a county previously designated nonurban nonattainment or redesignated in 401 KAR 51:010 after November 15, 1990, final compliance may be extended to May 31, 1995, and the schedule in paragraphs (a) and (b) of this subsection adjusted by the cabinet.

#### **Section 7. Exemptions.**

(1) Process units which process only heavy liquid VOC shall be exempt from Section 4 of this regulation.

(2) Equipment operating under a vacuum shall be exempt from provisions of] this regulation.

(3) Affected facilities within a process unit that has the design capacity to manufacture less than 1,000 megagrams per year of polyethylene, polypropylene, polystyrene, methyl tert-butyl ether, or one (1) or more of the synthetic organic chemicals listed in 401 KAR 59:305, shall be exempt from this regulation.

(4) Affected facilities within a process unit that manufactures beverage alcohol shall be exempt from this regulation.

#### **Section 8. Modifications.**

(1) If, after at least one (1) complete annual check, the operator determines that modifications of the monitoring requirements are in order, he may request in writing to the cabinet that a revision to the monitoring requirements be made. The submittal shall include data that have been developed to justify modifications in the monitoring schedule. The cabinet may grant this revision to the monitoring requirements based upon a showing which is satisfactory to the cabinet.

(2) An owner or operator may elect to comply with the alternative standards for valves contained in 401 KAR 59:305. In 401 KAR 59:305 under skip period leak detection and repair alternative for valves, the phrase "60.482-7" shall be read as "Section 4 of this regulation."

Effective Date: June 24, 1992

|              | Date Submitted<br>to EPA | Date Approved<br>by EPA | Federal<br>Register |
|--------------|--------------------------|-------------------------|---------------------|
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APPENDIX A TO 401 KAR 61:175

EQUATION FOR POTROOM GROUP EMISSIONS

$$E_p = \frac{(CQ)_1 10^{-6} + (CQ)_2 10^{-6}}{M}$$

Where:

- $E_p$  = Primary control system emissions of gaseous fluorides in kg/metric ton of aluminum produced at any plant other than a dry scrubbing plant.
- = Potroom group emissions of total fluorides in kg/metric ton of aluminum produced at dry scrubbing plants.
- $C$  = For dry scrubbing plants, concentration of total fluorides in mg/dscm as determined by Reference Method 13A or 13B, or Reference Method 14 as applicable.
- = For plants other than dry scrubbing plants, concentration of gaseous fluorides as determined by Kentucky Method 130.
- $Q$  = Volumetric flow rate of the effluent gas stream in dscm/hour as determined by Reference Method 2 and/or Reference Method 14, as applicable.
- $10^{-6}$  = Conversion factor for mg to kg.
- $M$  = Rate of aluminum production in metric ton/hour as determined by Section 7(4) of this regulation.
- $(CQ)_1$  = Product of  $C$  and  $Q$  for measurements of primary control system effluent gas streams.
- $(CQ)_2$  = Product of  $C$  and  $Q$  for measurements of roof monitor effluent gas stream at dry scrubbing plants.  $(CQ)_2$  shall be equal to zero for any plant other than a dry scrubbing plant.